

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 15, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: A. Gurevitch, M. Bradisse (acting), and C. Berg (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending October 15, 2021

Safety Basis: CNS has experienced issues with discrepancies between special tooling actual weights and those documented in the safety analysis (see 3/12/21 and 3/19/21 reports). Based on these discrepancies, the CNS production tooling department instituted an improvement initiative to weigh all special tooling and provide safety analysis engineering (SAE) with bounding tool weights, ensuring the safety analysis contains conservative values. As a result of this effort, in its first batch of reported tooling weights, CNS identified 53 tools that had an actual weight larger than that listed in the safety analysis. In August, based on these non-bounding special tooling weights, SAE declared a potential inadequacy of the safety analysis and subsequently determined it represented an unreviewed safety question (see 8/6/21 and 8/13/21 reports).

In September, CNS revised and resubmitted an evaluation of the safety of the situation to address these tooling weight discrepancies. The currently applied weapon response rules bound the potential impact hazard for 51 of the 53 tools. For the remaining two tools, new weapon response rules were applied. For one tool, the weapon response change resulted in a new low order consequence for a falling technician scenario, which CNS prevented by application of an existing specific administrative control. For the second tool, the applied weapon response rule led to an increased probability of a consequence during a drop scenario; CNS identified that existing installed tooling around the unit would prevent the consequences from this impact scenario. Last week, NPO approved this evaluation of the safety of the situation.

Blast Door Interlock (BDI) Override: Nuclear explosive facilities have both a personnel and equipment passageway—each with an inner and outer blast door. The BDI system ensures that for each passage, only one blast door can be open at a time to prevent potential impacts to nuclear material and nuclear explosives from various scenarios (e.g., external fire, high wind, and external explosion). Following the completion of a material move by production technicians into a nuclear explosive bay, the CNS facility representative observed that the BDI system had been unintentionally overridden, resulting in an inoperable safety system that would allow both blast doors of one passageway to open. The facility representative entered the appropriate limiting condition for operation, administratively controlled the blast doors, and subsequently reset the BDI system. The technicians then checked the interlock system for functionality. Based on these actions, CNS system engineering concurred that the BDI system was again operable, and CNS exited the limiting condition for operation.

CNS categorized the event as a performance degradation of a safety class structure, system, or component when required to be operable. At the event investigation and critique, participants noted that technician pre-operational checks of the BDI system were completed without any identified problems. Additionally, technicians acknowledged that during opening of the inner blast door during the material move, they heard the blast door magnetic components begin to chatter. CNS is currently investigating whether this chattering resulted in an unevaluated failure mechanism that could lead to the BDI system override.